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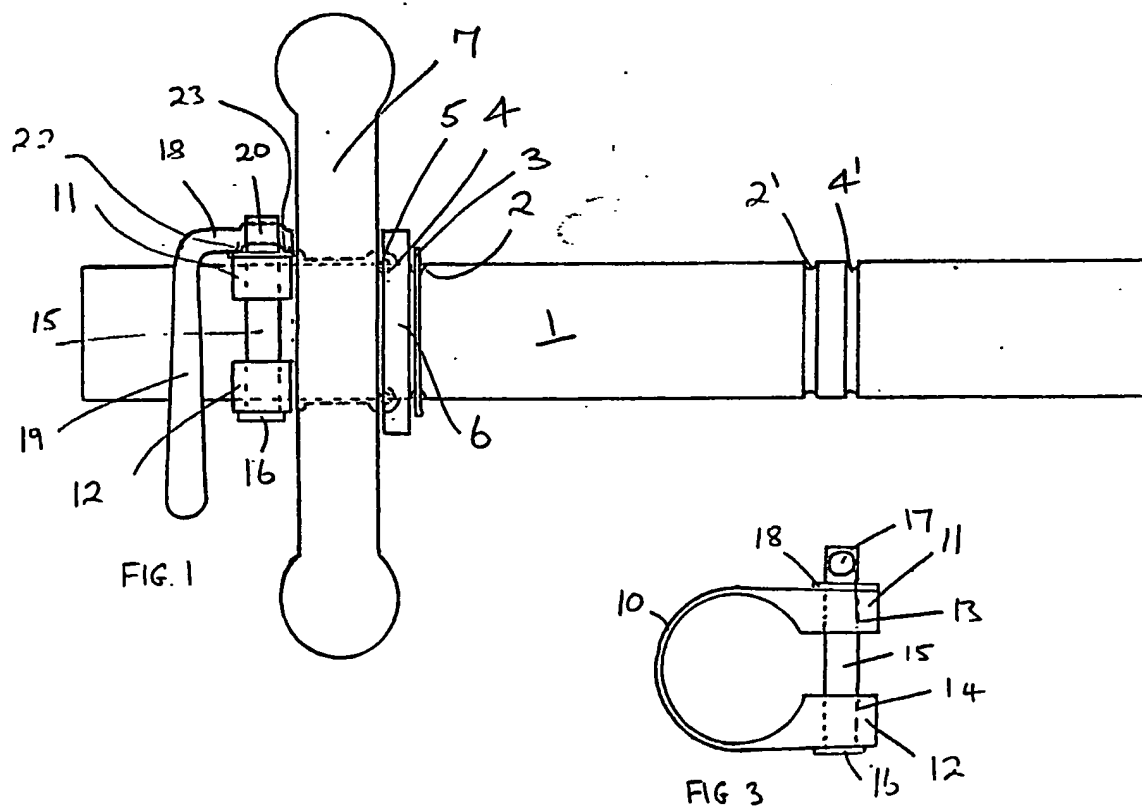
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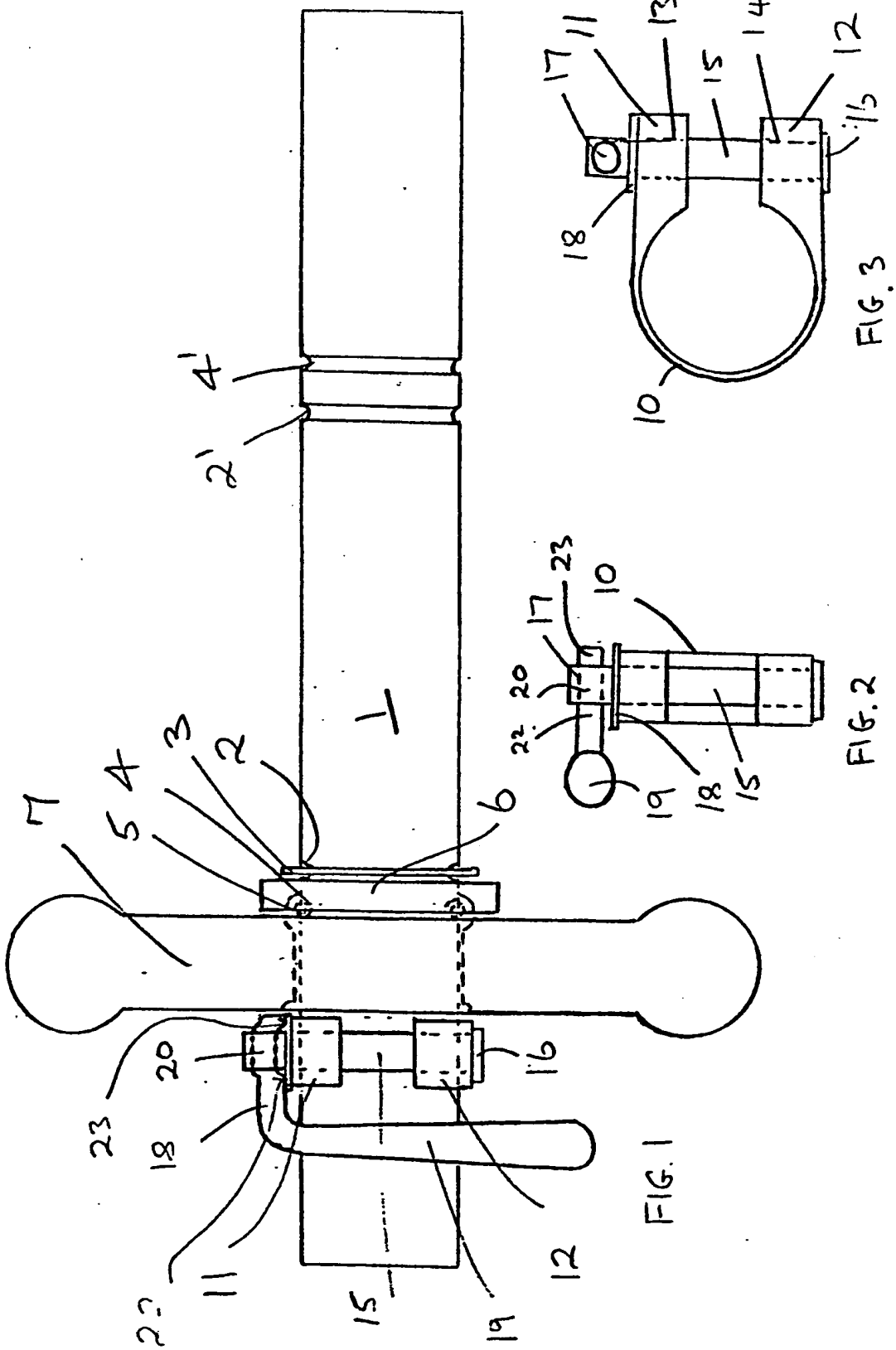
(58) Field of search
A6M

(54) Improvements in or relating to exercise devices

(57) The device comprises a shaft 1, a weight 7 slidably mounted on the shaft, and a clamp for retaining the weight on the shaft. The clamp includes a resilient arcuate portion 10 having first and second ends 11, 12 and ordinarily adopts a first configuration in which it is slidable along the shaft 1. A means 15, 18 is provided to urge the first and second ends 11, 12 together to cause the resilient portion 10 to adopt a second configuration in which it tightly grips the shaft 1. Circlips 3, 5 and a washer 6 held therebetween serve as an inner abutment for the weight 7.



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SPECIFICATION

Improvements in or relating to exercise devices

This invention relates to exercise devices and is concerned with such devices for use when carrying out bodily exercises.

It is known to provide exercise devices for this purpose comprising a shaft having a weight mounted on the shaft. In the case where the device is a hand-held device, the shaft includes a portion to be gripped by the hand and, in use, the user lifts the device by means of said portion and carries out various exercises whilst doing so.

Generally, the weight is removably fitted to the shaft so that one or more different weights can be mounted on the shaft depending upon the circumstances. In this case, each weight ordinarily includes an aperture having a dimension corresponding to the cross-section of the shaft so that it can be slid onto the shaft. Then a collar formed of rigid material is slid onto the shaft and secured to the shaft by means of a screw or the like which is in threaded engagement with a hole in the collar so that by suitably rotating the screw it protrudes through the collar and engages with the surface of the shaft so as to lock the collar in position. Normally, the screw has a knurled surface to enable the user to adequately tighten it up. The collar, thus fixed to the shaft, prevents the weight(s) from sliding along to, and falling off the end of, the shaft.

It is particularly important that the or each weight is securely held to the shaft since if it were to become detached during use considerable damage and/or injury could be caused. Thus, it is necessary for the screw to be tightened very securely and frequently this means that it is difficult to slacken off the screw when it is desired to change the weights on the shaft.

With a view to overcoming this problem, it is known to provide the screw with a lever to facilitate tightening and slackening the collar. Even so, however, it is often difficult to undo the screw. The reason for this is that the collar engages the shaft over only a small area i.e. the area presented by the screw and that area of the internal surface of the collar which is diametrically opposite thereto. Because of this small area of contact, it is necessary for the screw to be tightened to a very great extent in order to ensure that adequate frictional forces are developed to prevent the collar sliding along the shaft and thereby allowing the weight or weights to become detached. Moreover, even when such a lever is provided on the screw, a considerable number of turns is needed to slacken off the screw sufficiently and this is time-consuming.

It is an object of the present invention to provide an improvement in the manner in which weights are secured to the shaft of exercise devices.

According to the present invention there is provided an exercise device for use in exercising the body, which device comprises:

- i) a shaft,
- ii) a weight slideably mounted on the shaft, and
- iii) a clamp for retaining the weight on the shaft

said clamp encircling the shaft and including:—

a) a resilient arcuate portion having first and second end portions, which clamp ordinarily adopts a first configuration in which it is slidable along the shaft but, by virtue of the resilient nature of said arcuate portion, is capable of adopting a second configuration in which it tightly grips the shaft so as not to be displaceable therealong, and

b) a means of urging the first and second end portions together to cause the resilient portion to adopt said second configuration.

Because of the resilient nature of said resilient portion, when it is in its second configuration it can contact the outer surface of the shaft over a relatively large area. Thus, the force needed to be exerted by the clamp on the shaft in order to ensure that neither it, nor the weights, can slide off the shaft is relatively much less than in the conventional device.

In a particularly preferred embodiment, the first and second end portions are each provided with a hole, the holes in the end portions being substantially in registry with one another. In this case, the urging means may comprise a rod passing through the holes and carrying a pair of abutments adapted to bear, either directly or indirectly, against the end portions, a means being provided to cause relative movement of the two abutments towards one another and thereby cause the resilient portion to adopt its second configuration. In this case, the means for causing relative movement of the abutments may be in the form of a bar passing through a hole in one end of the rod, the bar being provided with a cam face, constituting one of the abutments, so that rotation of the bar within the hole causes the cam face to exert pressure on an end portion and move it towards the other end portion whereby the resilient portion is caused to adopt its second configuration. In this way, rotation of the bar by less than a single revolution can be quite sufficient to cause the resilient portion of the clamp to move between its first configuration and its second configuration in which it is firmly engaged with the shaft and hence reliably retains the weights on the shaft. The bar is preferably provided with a lever forming an angle thereto so that the bar may be more easily rotated in the hole.

The exercise device of the present invention may be a hand-held device. In this case it may be in the form of a dumb-bell (i.e. for single-handed use) or in the form of a bar-bell (i.e. for two-handed use). Alternatively the exercise device may be of the so-called multigym type wherein the user lifts the device by means of a cord and pulley arrangement.

For a better understanding of the invention and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which:—

Figure 1 is a side view of a hand-held device of the present invention, with its clamp in the closed position.

Figure 2 is an end view of the clamp of the device of Figure 1 in its open position, and

Figure 3 is a side view of the clamp of the device of Figure 1

Referring to the drawings, there is shown a dumb-bell comprising a generally cylindrical shaft 1 having a circular cross-section of diameter about 1 inch. The shaft 1 includes a first circumferential groove 2 located somewhat to one side of the midpoint of the shaft. A circlip 3 formed of rectangular sectioned metal is located within the groove 2. A second circumferential groove 4 is provided in the surface of the shaft adjacent to the first groove 2 and this second groove 4 carries a circlip 5 of circular cross-section. Located between, and retained by, the circlips 3 and 5 is a metallic washer 6. Similar grooves 2' and 4' accommodating similar circlips for retaining a similar washer are symmetrically disposed at the other end of the shaft 1. The cylindrical surface of the shaft 1 between the grooves 2 and 2' is knurled and serves as a handle whereby the device may be held.

A generally disc-like weight 7 provided with a central aperture having a dimension corresponding to the cross-sectional dimension of the shaft 1 is mounted on the shaft 1 between the free end of the shaft and the washer 6. The weight 7 is mounted on the shaft 1 by means of its central aperture and can be readily slid along the shaft. One or more other weights may be similarly mounted on the shaft. The or each weight is held on the shaft by means of a clamp which encircles the shaft. The clamp comprises an arcuate portion 10 which is of generally semi-cylindrical shape and is formed of a relatively resilient metal. By virtue of the resilient nature of the arcuate portion 10, the clamp ordinarily adopts a first configuration in which it fits loosely around the shaft.

The arcuate portion 10 terminates in first and second end portions 11 and 12. The first end portion 11 is provided with a hole 13 which is substantially in registry with a hole 14 provided in the second end portion 12. A rod 15 passes through these holes 13 and 14 and terminates in a flange 16 at one end. The other end of the rod 15 includes a bore 17 through which passes a captive bar 18 provided with a lever 19 at substantially right angles thereto to facilitate rotation of the bar 18 within the bore 17. (The bar 18 and lever 19 have been omitted from Figure 3 in the interests of clarity). The bar 18 includes a portion 20 having a similar dimension to that of the bore 17 and this portion 20 is mounted for rotation within the bore 17. However, the bar 18 is cranked so that the portion 20 is eccentric with respect to the longitudinal axis of the bar 18. Thus the longitudinal axis of the bar 18 and the longitudinal axis of the portion 20 are laterally displaced from one another so that the bar 18 is provided with a pair of surfaces 22 and 23, at either side of portion 20, which act as cam faces on rotation of the bar 18 about the longitudinal axis of the portion 20. A washer 21 is provided between the bar 18 and the first end portion 11 of the clamp.

By virtue of the eccentric arrangement of the bar 18 in the bore 17 rotation of the bar 18 by means of the lever 19 causes the cam faces 22 and 23 to bear against the washer 21 and hence, indirectly, against the first end portion 11 as shown in Figure 1. As a consequence, the first end portion 11 is urged

towards the second end portion 12 whereby the arcuate resilient portion 10 is caused to bend around the shaft and the clamp adopts a second configuration wherein it tightly grips the shaft. In this second configuration, substantially the whole of the inner face of the arcuate portion 10 is in frictional engagement with the adjacent outer surface of the shaft.

In use, the desired weight or weights is/are slid onto the shaft so that they rest against the washer 6. Then the clamp, in its first configuration (as shown in Figure 2), is slid onto the shaft adjacent to the or the outermost weight. The lever 19 is then actuated to rotate the bar 18 and cause the clamp to adopt its second configuration (as shown in Figures 1 and 3) in which it tightly grips the shaft and retains the weight(s) in position on the shaft. It will be apparent that about one quarter of a turn of the bar 18 is sufficient to move the clamp between its first and second configurations. In this way, opening and closing of the clamp can be effected very quickly and the clamping action of the clamp, when in its second configuration, is particularly good because of the large area of frictional contact between the clamp and the shaft. Thus, the weights on the shaft can be quickly and safely altered whenever desired.

If desired, weights may be provided on the other end of the shaft and secured thereto by a second similar clamp.

In an alternative embodiment, instead of using washer 6 to prevent the weight sliding towards the mid-point of the shaft, this can be effected by means of another similar clamp.

CLAIMS

1. An exercise device for use in exercising the body, which device comprises:
 - i) a shaft,
 - ii) a weight slidably mounted on the shaft, and
 - iii) a clamp for retaining the weight on the shaft, said clamp encircling the shaft and including a resilient arcuate portion having first and second end portions, which clamp ordinarily adopts a first configuration in which it is slidable along the shaft but, by virtue of the resilient nature of said arcuate portion, is capable of adopting a second configuration in which it tightly grips the shaft so as not to be displaceable therealong, the clamp additionally including a means of urging the first and second end portions together to cause the clamp to adopt said second configuration.
2. An exercise device as claimed in claim 1 wherein, the first and second end portions are each provided with a hole, the holes in the end portions being substantially in registry with one another.
3. An exercise device as claimed in claim 2 wherein the urging means comprises a rod passing through the holes and carrying a pair of abutments adapted to bear, either directly or indirectly, against the end portions, a means being provided to cause relative movement of the two abutments towards one another and thereby cause the resilient portion to adopt its second configuration.
4. An exercise device as claimed in claim 3

- wherein said means for causing relative movement of the abutments is in the form of a bar passing through a hole in one end of the rod, the bar being provided with a cam face, constituting one of the abutments, so that rotation of the bar within the hole causes the cam face to exert pressure on an end portion and move it towards the other end portion whereby the resilient portion is caused to adopt its second configuration.
5. An exercise device as claimed in claim 4, wherein said bar is provided with a lever forming an angle thereto so that the bar may be more easily rotated in the hole.
6. An exercise device as claimed in any preceding claim and adapted to be hand-held.
7. An exercise device as claimed in claim 6 wherein the device is in the form of a dumb-bell.
8. An exercise device as claimed in claim 6 wherein the device is in the form of a bar-bell.
9. An exercise device as claimed in any one of claims 1 to 5 wherein the device is of a type wherein the user lifts the device by means of a cord and pulley arrangement.
10. An exercise device substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.